



## SEQUENCE LISTING

<110> Taramino, Graziana  
Sakai, Hajime  
Meeley, Robert B.  
Niu, Xiaomu

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Val Ser Lys Leu Leu Ala His Leu Pro Leu Ala Asp Arg Ala Glu Ala	
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Ala Val Thr Ile Ser Tyr Glu Ala Gln Ala Arg Leu Arg Asp Pro Ile	
65 70 75 80	
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Tyr Gly Cys Val Ala His Ile Phe Ala Leu Gln Gln Gln Val Met Thr	
85 90 95	
ctg cag ggc cag ctg ggc tcg ctc aag ggc cag ggc ggc cag ggg cag	336
Leu Gln Ala Gln Leu Ala Ser Leu Lys Ala Gln Ala Ala Gln Gly Gln	
100 105 110	
cag ggc gtg cac gag gac gcc aag ggc tac gtg ggc agc gcc gcc ggc	384
Gln Gly Val His Glu Asp Ala Lys Gly Tyr Val Gly Ser Ala Ala Ala	
115 120 125	
gag cag cta ggt tac ggc tac ccc tgg tgc agc ggc aat gga ggc gcc	432
Glu Gln Leu Gly Tyr Gly Tyr Pro Trp Cys Ser Gly Asn Gly Gly Ala	
130 135 140	
gca gca gca gca ggc gcc gtg ggc ggc ccc gcc ggc cag ccg ggc gcc	480
Ala Ala Ala Ala Gly Ala Val Gly Ala Pro Ala Ala Gln Pro Gly Ala	
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tac ggc aat ggc ggc cac gag tcc ctg acc ggc ctg ctg ggg tcg tcg	528
Tyr Gly Asn Gly Ala His Glu Ser Leu Thr Ala Leu Leu Gly Ser Ser	
165 170 175	
gac tac atg cag cag tcg ctg tac cac ggc ttc gag cag gcc ggc gcc	576
Asp Tyr Met Gln Gln Ser Leu Tyr His Ala Phe Glu Gln Ala Gly Ala	
180 185 190	
gac gac gac gac ggc cgg cag ggg tac ggc ttc gag gca ggc ggc gag	624
Asp Asp Asp Asp Gly Arg Gln Gly Tyr Gly Phe Glu Ala Ala Ala Glu	
195 200 205	
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Ser Ser Ser Leu Gly Ala Glu Glu Ser Gly Trp Arg Ser Ser Ser Gly	
210 215 220	
tac caa gac tgc gag gac ctg cag agc gtg gct tac gct tac ctg aac	720
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His Arg Ser	

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 35 40 45  
 Val Ser Lys Leu Leu Ala His Leu Pro Leu Ala Asp Arg Ala Glu Ala  
 50 55 60  
 Ala Val Thr Ile Ser Tyr Glu Ala Gln Ala Arg Leu Arg Asp Pro Ile  
 65 70 75 80  
 Tyr Gly Cys Val Ala His Ile Phe Ala Leu Gln Gln Gln Val Met Thr  
 85 90 95  
 Leu Gln Ala Gln Leu Ala Ser Leu Lys Ala Gln Ala Ala Gln Gly Gln  
 100 105 110  
 Gln Gly Val His Glu Asp Ala Lys Gly Tyr Val Gly Ser Ala Ala Ala  
 115 120 125  
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 Tyr Gly Asn Gly Ala His Glu Ser Leu Thr Ala Leu Leu Gly Ser Ser  
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Lys Cys Val Arg Gly Cys Val Phe Ala Pro Tyr Phe Cys His Glu Gln	
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Gly Ala Ala His Phe Ala Ala Ile His Lys Val Phe Gly Ala Ser Asn	
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ctg cag gcg cag ctg gcg tcg ctc aag gcg gcg gcg gcg caa ggg ata	336
Leu Gln Ala Gln Leu Ala Ser Leu Lys Ala Ala Ala Ala Gln Gly Ile	
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cac cac cag gac gtc ggc gcc acc acc aag ggc ggc tac atg agc gcc	384
His His Gln Asp Val Gly Ala Thr Thr Lys Gly Gly Tyr Met Ser Ala	
115 120 125	
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Ala Ala Thr Ala Ala Asp Asp Gln Leu Gly Tyr Gly Gly Tyr Asn Gln	
130 135 140	
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Trp Cys Gly Ser Asn Gly Gly Gly Ala Pro Ala Ala Ser Gln Pro Gly	
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Ala Tyr Ser Ser Asn Gly Gly Ala Gly His Gly His Asp Ser Ile Thr	
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225 230 235 240	
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Val Ser Lys Leu Leu Ala His Leu Pro Leu Ala Asp Arg Pro Glu Ala  
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Ala Val Thr Ile Ser Tyr Glu Ala Gln Ala Arg Leu Arg Asp Pro Ile  
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Tyr Gly Cys Val Ala His Ile Phe Ala Leu Gln Gln Gln Val Met Thr  
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Leu Gln Ala Gln Leu Ala Ser Leu Lys Ala Ala Ala Ala Gln Gly Ile  
100 105 110

His His Gln Asp Val Gly Ala Thr Thr Lys Gly Gly Tyr Met Ser Ala  
115 120 125

Ala Ala Thr Ala Ala Asp Asp Gln Leu Gly Tyr Gly Gly Tyr Asn Gln  
130 135 140

Trp Cys Gly Ser Asn Gly Gly Ala Pro Ala Ala Ser Gln Pro Gly  
145 150 155 160

Ala Tyr Ser Ser Asn Gly Gly Ala Gly His Gly His Asp Ser Ile Thr  
165 170 175

Ala Leu Leu Ala Ala Gly Ser Asp Tyr Met Gln His Ser Leu Tyr His  
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Ala Phe Glu His Ser Glu Gly Ala Gly Ala Val Asp Asp Gly His Ala  
195 200 205

Ala Ala Ala Ala Phe Glu Ala Ala Ala Glu Ser Ser Ser Cys Gly Met  
210 215 220

Ala Ala Ser Phe Ala Ala Asp Glu Ser Val Trp Arg Ser Ser Ser Ser  
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225                      230                      235                      240

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Gly Ala Ala His Phe Ala Ala Ile His Lys Val Phe Gly Ala Ser Asn  
                                  35                                   40                                   45

Val Ser Lys Leu Leu Ala His Leu Pro Leu Ala Asp Arg Xaa Glu Ala  
                                  50                                   55                                   60

Ala Val Thr Ile Ser Tyr Glu Ala Gln Ala Arg Leu Arg Asp Pro Ile  
 65                                   70                                   75                                   80

Tyr Gly Cys Val Ala His Ile Phe Ala Leu Gln Gln Gln Val Met Thr  
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24

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Gly Ala Ala His Phe Ala Ala Ile His Lys Val Phe Gly Ala Ser Asn  
35 40 45

Val Ser Lys Leu Leu Ala His Leu Pro Leu Ala Asp Arg Pro Glu Ala  
50 55 60

Ala Val Thr Ile Ser Tyr Glu Ala Gln Ala Arg Leu Arg Asp Pro Ile  
65 70 75 80

Tyr Gly Cys Val Ala His Ile Phe Ala Leu Gln Gln Gln Val Arg Ile  
85 90 95

Val His Ser Ile Asp Val Ser Leu Val Gly Val Ala Gly Leu Leu Ile  
100 105 110

Leu Val Ser Arg Arg Val Phe Glu Gln Val Met Thr Leu Gln Ala Gln  
115 120 125

Leu Ala Ser Leu Lys Ala Ala Ala Ala Gln Gly Ile His His Gln Asp  
130 135 140

Val Gly Ala Thr Thr Lys Gly Gly Tyr Met Ser Ala Ala Ala Thr Ala  
145 150 155 160

Ala Asp Asp Gln Leu Gly Tyr Gly Gly Tyr Asn Gln Trp Cys Gly Ser

165

170

175

Asn Gly Gly Gly Ala Pro Ala Ala Ser Gln Pro Gly Ala Tyr Ser Ser  
180 185 190

Asn Gly Gly Ala Gly His Gly His Asp Ser Ile Thr Ala Leu Leu Ala  
195 200 205

Ala Gly Ser Asp Tyr Met Gln His Ser Leu Tyr His Ala Phe Glu His  
210 215 220

Ser Glu Gly Ala Gly Ala Val Asp Asp Gly His Ala Ala Ala Ala Ala  
225 230 235 240

Phe Glu Ala Ala Ala Glu Ser Ser Ser Cys Gly Met Ala Ala Ser Phe  
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Cys His Glu Gln Gly Ala Ser His Phe Ala Ala Ile His Lys Val Phe  
35 40 45

Gly Ala Ser Asn Ala Ser Lys Leu Leu Ser His Leu Pro Ile Ser Asp  
50 55 60

Arg Cys Glu Ala Ala Ile Thr Ile Ser Tyr Glu Ala Gln Ala Arg Leu  
65 70 75 80

Gln Asp Pro Ile Tyr Gly Cys Val Ser His Ile Phe Ala Leu Gln Gln  
85 90 95

Gln Val Val Asn Leu Gln Ala Glu Leu Glu Ile Leu Lys Gln Gln Ala  
Page 18

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115	120	125
Ser Tyr Tyr Gly Asp Thr Thr Lys Ala Pro Tyr His His Asp His Gln		
130	135	140
Asn Ile Tyr His His His Asp Gln Thr His Leu Val Tyr Gln Thr Gly		
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Ser Ser Gly Thr Val Gln His Gly Asp Ala Thr Glu Ser Ser Tyr His		
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Lys Cys Val Arg Gly Cys Val Phe Ala Pro Tyr Phe Cys His Glu Gln
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Gly Ala Ala His Phe Ala Ala Ile His Lys Val Phe Gly Ala Ser Asn
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Val Ser Lys Leu Leu Ala His Leu Pro Leu Ala Asp Arg Ala Glu Ala
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Ala Val Thr Ile Ser Tyr Glu Ala Gln Ala Arg Leu Arg Asp Pro Ile
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Tyr Gly Cys Val Ala His Ile Phe Ala Leu Gln Gln Gln Val Met Thr
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Gln Gly Val His Glu Asp Ala Lys Gly Tyr Val Gly Ser Ala Ala Ala
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Ser Asp Tyr Met Gln Gln Ser Leu Tyr His Ala Phe Glu Gln Ala Gly  
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Asn His Arg Ser

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Ala Ser Lys Leu Leu Ala His Leu Pro Leu Ala Asp Arg Pro Glu Ala  
Page 24



50

55

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Arg Val His Asp Val Asp Asp Ala Lys Gly Tyr Val Gly Thr Ala Ala  
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Ser Asp Tyr Leu Gln Gln Ser Pro Cys His Ala Phe Glu His Ala Gly  
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Ala Asp Asp Lys Asp Asp Asp Gly Arg Gln Gly Asn Thr Phe Asp Phe  
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Glu Ala Ala Ala Asp Ser Ser Ser Phe Gly Ala Glu Glu Ser Gly Trp  
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